EPA Region 9
Del Amo Superfund Site

EPA ANNOUNCES PROPOSED PLAN FOR CLEANUP OF WASTE PITS AT DEL AMO SITE

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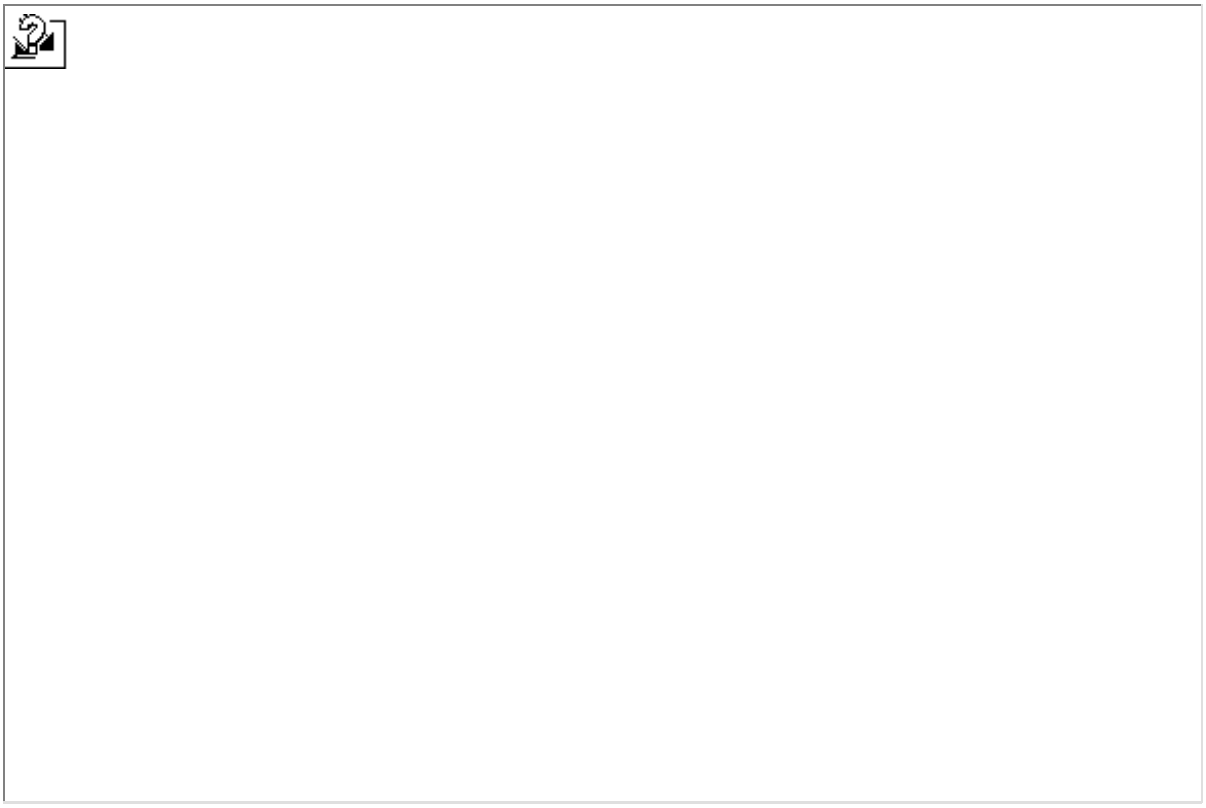
This Proposed Plan announces the U.S. Environmental Protection Agency's(EPA) preferred cleanup method for the Waste Pits Area of the proposed Del Amo Superfund site. EPA is requesting written and oral comments on this plan. All the information EPA relied on in formulating this plan is available to the public at the Torrance or Carson Public Libraries. The purpose of this fact sheet is to provide specific information about the alternative cleanup methods EPA is considering, to assist the public in providing its comments. EPA's proposed remedy is preliminary and a final decision will not be made until all comments are considered.

The 60-day public comment period begins December 16, 1996, and closes February 13, 1997. A public meeting will be held on January 29, 1997, at the Torrance Cultural Arts to solicit comments and answer questions about the site.



The proposed remedy for cleanup of the Waste Pit Area includes the following components:

- RCRA-equivalent cap over the Waste Pit Area
- Soil vapor extraction (SVE)
- Surface water controls
- Perimeter fence
- Maintenance of soil cover and vegetation
- Deed restrictions
- Groundwater monitoring

This cleanup plan is primarily for the contaminated waste, soil and subsurface gas within the 3.7-acre Waste Pit Area of the Del Amo site (see Figure 2). The plan also provides some interim clean-up measures that benefit the groundwater beneath the pits. EPA plans to select a separate remedy for the ultimate cleanup of the site's groundwater in the summer of 1997. A supplement to this Proposed Plan is available upon request which provides greater technical detail on EPA's strategy for setting this remedy's soil cleanup standards for groundwater protection.

SITE HISTORY

In 1942, several companies, under contract to the United States Government, constructed a facility to produce synthetic rubber on about 280 acres of land. From 1942 to 1955, the plants were owned by the United States but were operated by private companies for the government. The private companies included the Shell Oil Company and the Dow Chemical Company. In 1955, the United States sold the facility to Shell, which operated the facility through 1972. In 1972, the facility was sold to a development company and was subsequently dismantled. Most of the area where the synthetic rubber manufacturing facility was located has since been developed as an industrial park. Pit 1-A was excavated by the landowner during the mid-1980s.

In 1985, the California Department of Toxic Substances Control (DTSC) began investigating disposal areas within the Waste Pit Area. In July 1991, EPA proposed the Del Amo site be added to EPA's National Priorities List (NPL), which is a list of the nation's most hazardous sites. Shortly after that, DTSC turned over regulatory responsibility for the site to EPA. In June 1996, EPA re-proposed the site with updated technical information.

Site Characteristics and Contamination

The Waste Pit Area includes three former evaporation ponds (referred to as Pits 1A, 1B, 1C), the eastern evaporation pond, and six former disposal pits (referred to as pits 2A through 2F). Currently, the Waste Pit Area is a vacant lot, surrounded by a double row of chain-link fencing, and is covered by fill material and weeds which are mowed on a regular basis. An earthen mound approximately 15 feet high is present over the western portion of the area.

The fill over the waste pits ranges in thickness from 2 to 15 feet. The average depth to the base of waste material in the 1-series pits (including former evaporation ponds 1B and 1C) is about eight feet; while the depth to the base of the waste material in the 2-series pits (including former disposal pits 2A through 2F) ranges from 20 to 31 feet. Beneath several of the pits, contaminated soil extends down to the water table, a depth of about 60 feet. The lateral extent of contamination is confined within the inner fence area surrounding the pits.

For the waste material in the Del Amo Pits, the chemicals of concern are semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs) (see Table 1). Soil beneath and adjacent to the waste material is also contaminated with VOCs and SVOCs. Benzene, a VOC and known human carcinogen, is found most often and at the highest concentrations in waste, soil and groundwater. Concentrations of metals detected in the waste pits samples are below the regulatory criteria for hazardous waste.

TABLE 1 CHEMICALS OF CONCERN

Chemical	1-Series Pits	2 - Series Pits	Soil Below	Soil Adjacent
Total Semi-Volatile Organic Compounds	1,000ppm - 38,000ppm	22ppm - 30,200ppm	1ppm - 10,199ppm	ND* - 1,393ppm
Total Volatile Organic Compounds	126ppm - 4,600ppm	2,300ppm - -117,000ppm	ND* - 42,640ppm	ND* - 10,400ppm

*not detected

Emissions tests for waste and heavily contaminated soil immediately beneath the waste indicated that all pits contain waste that are capable of emitting significant levels of VOCs into the air, if disturbed. In addition, the 2-series pits are capable of emitting significant levels of hydrogen sulfide (H2S) gas if the waste comes into

contact with air. Emissions of the VOC benzene and H2S are of greatest concern both in terms of the amount emitted and health effects.

EPA's proposed remedy concludes that cleanup of the eastern evaporation pond is not necessary because the analytical results for the soil borings from the pond indicate that soil contamination is not present. Pit 1-A was excavated in the mid-1980's. Data from 1984 soil samples collected beneath the floor of the excavation indicated that contaminants were not present at levels of concern. However, because of the age of this data, the proposed remedy and other alternatives considered for site cleanup (with the exception of excavation) apply to the former location of Pit 1-A. Additional soil samples may be collected during design to determine the appropriateness of extending the selected cleanup plan to the former location of Pit 1-A.

Site Health Risk

To determine the potential health risks associated with contamination at hazardous waste sites, EPA conducts a risk assessment. An EPA risk assessment estimates the potential adverse effects on human health from potential exposure to site chemicals using site data and a theoretical model. EPA's risk assessment does not evaluate past exposures or existing health effects. Such exposures and health effects are evaluated by the Federal Agency for Toxic Substances and Disease Registry (ATSDR).

The risk assessment for the waste pits is based on existing conditions. Potential risks associated with groundwater will be assessed separately as part of EPA's final cleanup plan for groundwater. The assessment assumes a double row of chain-link fence around the waste pit area, fill soil covering the waste, and routine inspection and maintenance of the area. It assumes that a resident is located at the fence line on the south side of the pits and that an office worker is located at the northern fence line. Finally, it assumes that existing controls prevent direct contact with waste and contaminated soil. Therefore, the only exposure pathway quantitatively evaluated is potential risk from inhalation of vapors.

The waste pits' assessment does not quantitatively evaluate potential future exposures that might occur if conditions at the site change (i.e. the fill soil cover over the waste is allowed to erode and the fence is not maintained). This risk assessment also does not quantitatively evaluate risks from contaminated groundwater.

Based on the assumption described above, the results of the waste pits risk assessment indicate that contaminants do not currently pose a threat to human health via the vapor inhalation pathway. Air samples collected around the perimeter of the waste pits and directly on top of the pits showed that the pits contribute VOCs to the atmosphere within the range that EPA has discretion to take action.

Although the risk assessment indicated that the pits do not currently pose an unacceptable threat to human health via the vapor inhalation pathway, the assessment was limited by its assumptions. There is a significant possibility that a release could occur that would result in an unacceptable risk. For example, if the waste pits were disturbed, significant emissions of hydrogen sulfide and volatile organic contaminants could be released, which would pose a risk to the public.

The risk assessment also acknowledges that, while contaminated groundwater in the vicinity of the pits is currently not used for any purpose, there is concern about future impacts to groundwater from the waste pits. This groundwater is considered a potential future drinking water source by the State of California.

An assessment of ecological risks was performed when the State of California was the lead agency for the site. That assessment concluded that no plant species listed as rare and endangered or sensitive were observed at the

site or in the immediate site vicinity. Due to the extremely disturbed nature of the site, no rare, endangered or sensitive species occur at the site.

Reason for Taking Clean-up Action

EPA proposes to take a remedial action at the waste pits for the following reasons:

(1) **Preference for treatment** - The Superfund law expects EPA to use some form of active treatment (or a combination of treatment and containment) to address principal threats, wherever this is practical. A principal threat is material that contains hazardous substances, acts as a reservoir for further migration of contamination, and presents a risk if exposure occurred. The waste material contained in the Del Amo pits and the soil beneath the pits are considered a principal threat to human health due to their high benzene content. Benzene is a highly toxic and highly mobile contaminant.

(2) **Uncertain long-term controls** - Although current conditions have not resulted in a surface release posing risks that warrant action, there is a significant possibility that a surface release will occur in the future that would result in an unacceptable risk to human health. If the wastes were disturbed, significant emissions of VOCs and H2S could result that would pose this unacceptable risk. There is significant uncertainty about whether existing controls (the fence and fill cover) will be maintained over the time-frame that the waste would remain in place, i.e. indefinitely. Without maintenance, erosion of the surface soil cover would occur allowing direct contact with contaminants, allowing water runoff and wind to transport contaminants to nearby yards, allowing vapors to escape into the air. Surface releases like these have a significant possibility of resulting in an unacceptable risk.

(3) **Source Control** - Groundwater is contaminated under the pits at levels that far exceed federal safe drinking water standards. For example, the federal safe drinking water standard for benzene is 1 part per billion (ppb). Concentrations of benzene in groundwater beneath the pits are as high as 580,000 times this standard. EPA is proposing to take action on this right now because such action would support any future groundwater remedy and because it is warranted and appropriate to control the continuing source of contaminants from the waste pits to groundwater.

(4) **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)** - The federal Resource Conservation and Recovery Act (RCRA) governs the transportation, treatment and disposal of hazardous waste. EPA has determined that the waste pits remedy must comply with the RCRA requirements governing the closure and post-closure of hazardous waste landfills. The Del Amo pits will have to be "closed" like a landfill is closed - in a manner that is protective of human health and the environment.

(5) **Beneficial Future Land-Use** - The goal of the Superfund program is to protect public health and the environment by cleaning up hazardous waste sites and returning them to use. A cleanup action would allow the waste pit area to be developed in some type of beneficial way in the future. Certain activities, such as developing a park on top of a RCRA-equivalent cap, are possible and would not interfere with the effectiveness of the remedy.

Summary of Cleanup Alternatives Considered

The alternatives considered by EPA as possible cleanup options for contaminated waste and soil at the Waste Pit Area are described below.

ALTERNATIVE 1: NO ACTION

Under this alternative, no action would be taken at the Waste Pit Area. No remediation or monitoring of contaminated media would occur, and no access or deed restrictions would be implemented. EPA is required by law to consider no action as one of the possible alternatives. There would be no cost for Alternative 1.

ALTERNATIVE 2: INSTITUTIONAL CONTROLS

This alternative includes maintenance of the soil and vegetation cover currently present on the site, installation of surface water controls to prevent ponding of water and to prevent runoff onto adjacent properties, placement of deed restrictions prohibiting future residential use of the Waste Pit Area and prohibiting future use which could impact the integrity of the soil cover, and upgrading and maintaining the existing perimeter fence. This alternative also includes groundwater monitoring to evaluate potential changes in groundwater conditions over time.

The cost of Alternative Two would be approximately $790,000.

ALTERNATIVE 3: RCRA-EQUIVALENT CAP

Under this alternative, a RCRA-equivalent cap (a protective cover meeting the requirements of the Resource Conservation and Recovery Act for closure of hazardous waste landfills) would be constructed over waste and contaminated soil. A RCRA-equivalent cap consists of multiple layers, typically including a vegetated cover, a marker bed, a drainage layer, a low-permeability layer (including a plastic-like liner), a gas collection layer, and a grading layer. A cross-sectional view of a typical RCRA-equivalent cap is shown in Figure 4.

The objectives of the cap would be to:

- prevent direct contact with contaminants
- prevent generation of runoff and wind blown dust
- prevent emission of contaminants to the air
- prevent rainwater from washing through the waste pits and carrying contaminants into the groundwater
- prevent rainwater from washing through the soils below the pits, but above the water table, and carrying them into the groundwater.

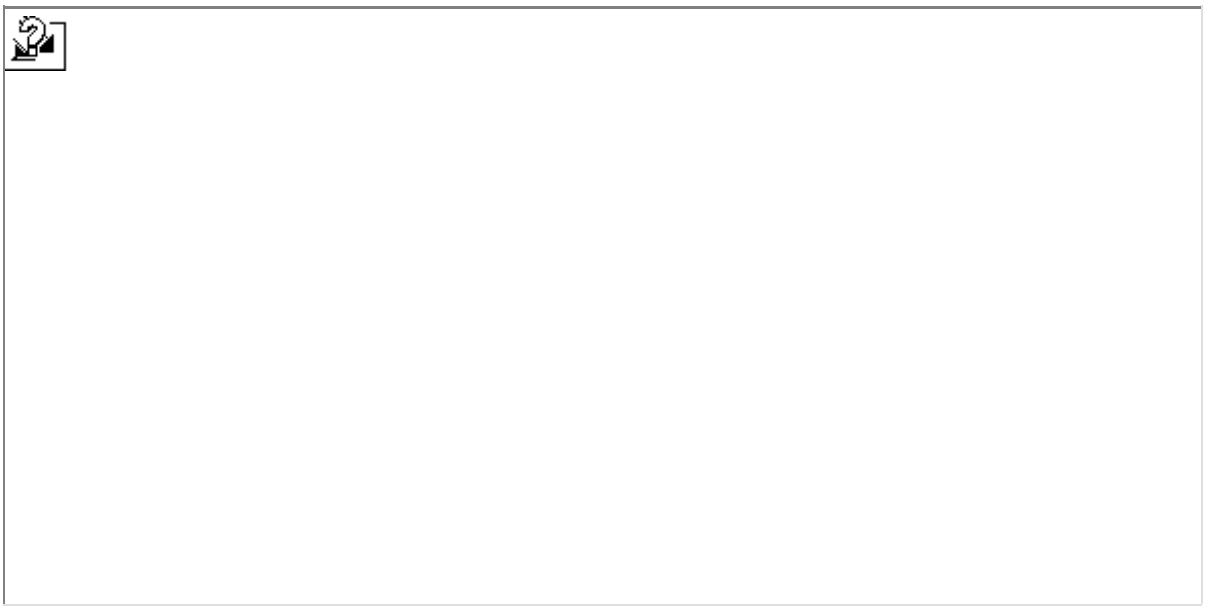
The design of the cap would be sufficient to prevent damage due to settling and earthquakes. Monitoring associated with the cap includes soil vapor monitoring at varying depths around the pits area, which would help determine whether any vapors are migrating or spreading laterally out from under the cap. Final design of the cap would be determined during the remedial design phase of the project. This alternative includes long-term maintenance of the cap.

To prevent ponding of water on the cap and to prevent runoff onto adjacent properties, this alternative includes surface water controls. This alternative also includes groundwater monitoring, as required by RCRA regulations, to evaluate potential changes in groundwater conditions over time.

To prevent inappropriate future land use or development, this alternative would also require deed restrictions prohibiting future residential use of the Waste Pit Area and prohibiting future use which could impact the integrity of the cap. In recent discussions, the community has expressed a preference that the waste pit area be developed as a park once the remedial action is constructed. Developing a park on top of a RCRA-equivalent cap is implementable and would not interfere with the effectiveness of the remedy. EPA will seek additional input from the community regarding preferences for future use of the property during the design phase of the project.

The cost of Alternative Three would be approximately $4,243,000.

Alternative 3 would require an estimated 6 to 12 months to design and construct.



ALTERNATIVE 4 RCRA-EQUIVALENT CAP AND SOIL VAPOR EXTRACTION OF CONTAMINATED SOIL

This aternative consists of a RCRA-equivalent cap as described in Alternative 3, and adds a soil vapor extraction (SVE) component. Soil vapor extraction is a process that physically separates contaminants from soil. The SVE system is designed to minimize the amount of contaminants that move from the waste pits or the soils beneath the pits.

WHAT IS A SVE?

As the name suggests, SVE extracts contaminants from the soil in vapor form. SVE systems are designed to remove contaminants that have a tendency to volatilize or evaporate easily. SVE removes volatile organic compounds and some semi-volatile organic compounds by applying a vacuum throughout a system of underground wells. Contaminants are pulled to the surface as vapor or gas and treated to meet air quality standards prior to being released to the atmosphere.

The SVE system would be applied to the soils under and adjacent to the pits. EPA's remedy calls for SVE for both coarse and fine-grained soil. The SVE system would not be applied to the waste material itself, because it is too dense to create a vacuum. The actual width and total depth of the soil vapor extraction zone would vary from location to location to some degree, based on a highly detailed review of soil characteristics and contaminant distribution to be made during remedial design and system installation.

In general, the vertical extent of the SVE coverage would extend from just below each pit to just above the groundwater table in what is called the "capillary fringe." The horizontal extent of the SVE zone would be the area where soil and soil vapor concentrations exceed short-term soil cleanup standards at the depths specified above. Short-term (or interim) soil cleanup standards are designed to protect groundwater. These standards would limit the amount of contamination that the waste pits could add to groundwater until the final groundwater cleanup plan is selected. Short-term soil performance standards are discussed in greater detail in the Supplement to this Proposed Plan. Although the SVE zone would extend horizontally to areas where

contamination exists wholly or in part due to present or past migration from the waste pits, it would not extend to where contamination exists solely due to gaseous diffusion from the water table.

The SVE system would be designed to minimize the amount of contaminants that are pulled down out of the pits and pulled up off of the capillary fringe. It would also be designed with the appropriate safety features required to allow safe unattended operation. The soil vapor extraction and treatment system would be inspected and monitored on a regular basis and repaired as needed.

A supplemental to this Proposed Plan is available upon request which provides greater technical detail on EPA's strategy for setting this remedy's soil cleanup standards for groundwater protection.

This Proposed Plan represents a conceptual design only. It is estimated that the SVE system would be required to operate for five years in order to meet short-term soil performance standards.

The objectives of Alternative 4 would be to:

- prevent direct contact with contaminants
- prevent generation of runoff and wind blown dust,
- prevent emission of contaminants to the air
- protect groundwater from contaminants which may leach out of the pits, and
- protect groundwater from contaminants which may leach out of the soils below the pits and above the water table
- protect groundwater from contaminants already in soils below the pits above the water table, in the event that the water table rises into the contaminated soil.

This alternative also includes groundwater monitoring, as required by RCRA regulations, to evaluate potential changes in groundwater conditions over time. To prevent inappropriate future land use or development, this alternative would require deed restrictions prohibiting future residential use of the Waste Pit Area and prohibiting future use which could impact the integrity of the cap.

Alternative 4 would require an estimated 8 to 12 months to design and construct.

ALTERNATIVE 5 COMPLETE EXCAVATION OF 1 SERIES AND 2 SERIES PITS BENEATH AN ENCLOSURE, AND SOIL VAPOR EXTRACTION OF CONTAMINATED SOIL

This alternative includes complete excavation of waste within the 1 series pits and the 2 series pits, and excavation of contaminated soil 5 feet beneath and around the boundary of these pits. The total excavation volume for Alternative 5 is estimated to be about 42,900 cubic yards.

High concentrations of VOC and hydrogen sulfide air emissions would require that the excavation be performed under a temporary enclosure equipped with a ventilation and emission control system. The ventilation system would reduce the concentration of airborne contaminants inside the enclosure. Exhaust hoods would be used to capture emissions from the face of the excavation and from the roll-off bins where excavated waste and soil would be stored prior to offsite transport. Contaminated air exhausted from within the enclosure would be treated on-site in a series of air treatment units prior to being released to the atmosphere. Upon excavation, the waste and soil would be transported to an offsite incinerator for treatment. Because of high toxic emissions during excavation, workers inside the enclosure would be required to wear protective clothing and self-contained breathing apparatus (SCBA) tanks. A full-scale excavation of contaminants with characteristics similar to the Del Amo waste (i.e. highly volatile and toxic) has never been done before.

The excavated area would be backfilled and a low-permeability cap would be installed after backfilling is complete. Since contaminated soil beneath the waste would be left in place, a soil vapor extraction system as

described in Alternative 4 would be required. To prevent ponding of water on the cap and runoff onto adjacent properties, this alternative also includes surface water controls. To prevent inappropriate future land use or development, the alternative would require deed restrictions. This alternative also includes groundwater monitoring to evaluate potential changes in groundwater conditions over time.

Alternative 5 would require an estimated 2 years for excavation and backfilling. Equipment design, procurement and construction, system start-up and shakedown, dismantling the enclosure and other equipment after excavation is complete would add an additional 2 years to the project, bringing the total project duration to an estimated 4 years.

The cost of Alternative 5 would be approximately $97,310,000.

All five clean-up alternatives are summaruzed in Table 2.

Reasons for EPA's Proposed Remedy

EPA preferred method for addressing the waste in the Del Amo Waste Pits is Alternative 4. EPA believes that Alternative 4 is fully protective of human health and the environment. EPA uses nine criteria to evaluate alternatives for cleanup of hazardous waste sites. One criterion is State approval. The California Department of Toxics Substances Control (DTSC) concurs with EPA's proposed remedy; however, the Department has reserved the right to make further comments during the public comment period. A second criterion, community acceptance, will be determined during the public comment period.

In considering these nine criteria, EPA has assumed that the properties along 204th Street immediately adjacent to the waste pit property will be permanently removed from residential or related uses as a result of the ongoing private buy-out mediation process, being conducted by Judge Jack Trotter (retired), between community residents and several responsible parties. Because of this, EPA's proposed remedy does not include evaluation of the purchase of any residential properties or permanent relocation of any residents. In the event that the mediation process fails, EPA reserves the right to re-evaluate the remedy.

EPA also believes that Alternative 4 is the most appropriate alternative for addressing, on an interim basis, the waste pits' contribution to contaminated groundwater.

Alternatives 1 and 2 were not selected as the preferred remedy because they do not meet the threshold criteria of Overall Protection of Human Health and the Environment and Compliance with ARARs.

Alternative 3 was not selected as the preferred remedy because it does not meet the statutory preference for treatment, and is not fully protective of human health and the environment. Section 121(b) of the Superfund law states a preference for remedies involving treatment as a principal element. A RCRA-equivalent cap does not involve treatment as a principal element. In addition, Alternative 3 may not eliminate the downward migration to groundwater of contaminants currently existing in the waste and soils and will not prevent contamination of groundwater caused by a rising water table contacting contaminated soil.

Alternative 5 was not selected as the preferred remedy due to uncertainties in short-term effectiveness and implementability and due to its significantly higher cost compared to Alternative 4 which is also protective of human health and the environment.

Overall Protection of Human Health and the Environment

Alternatives 1 and 2 are not protective of human health and the environment. Under Alternative 1, erosion of the

surface soil cover would occur, allowing direct contact with contaminants, allowing water runoff and wind to transport contaminants to nearby yards, and allowing vapors to escape into the air. Under both Alternatives 1 and 2 the waste pits would continue to be a source of groundwater contamination. A chain-link fence is not a reliable deterrent against trespassing which could result in disturbance of waste or contaminated soil.

Neither alternative would prevent the downward migration to groundwater of contaminants currently existing in the waste and soils and would not prevent contamination of groundwater caused by a rising water table contacting contaminated soil. Because Alternative 1 and 2 cannot meet the threshold criteria of Overall Protection Of Human Health and the Environment they are ineligible for selection as a remedy for the waste pits.

Alternative 3 is not fully protective of human health and the environment. Construction of a RCRA-equivalent cap would result in a permanent cover over the Waste Pit Area thereby eliminating the direct contact, ingestion and vapor inhalation pathways. Alternative 3 will also provide some degree of protection of groundwater by preventing infiltration of rainwater through waste and contaminated soil. However, Alternative 3 does not eliminate the downward migration to groundwater of contaminants currently existing in the waste and soil and will not prevent contamination of groundwater caused by a rising water table contacting contaminated soil. The State Water Resources Control Board considers groundwater beneath the pits a potential future source of drinking water. Alternative 3 does not fully protect this potential drinking water resource.

Alternative 4 provides overall protection of human health and the environment. Construction of a RCRA-equivalent cap would result in a permanent cover over the Waste Pit Area thereby eliminating the direct contact, ingestion and vapor inhalation pathways. The cap and the soil vapor extraction system would prevent contaminants in waste and soil from continuing to significantly contaminate groundwater. The cap will protect groundwater by preventing the infiltration of rainwater through waste and contaminated soil. The soil vapor extraction system would protect groundwater from the downward migration of contaminants currently existing in the waste and soil and will prevent significant contamination of groundwater caused by a rising water table contacting contaminated soil.

Alternative 5 provides overall protection of human health and the environment by complete excavation of waste and a small amount of adjacent contaminated soil. Excavation would eliminate direct contact, ingestion and vapor inhalation pathways. In addition, the waste would no longer be a source of groundwater contamination. The soil vapor extraction system would protect groundwater from the downward migration of contaminants currently existing in the soil and will prevent significant contamination of groundwater caused by a rising water table contacting contaminated soil.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Alternatives 1 and 2 do not comply with ARARs. Alternatives 1 and 2 do not meet federal and state laws and regulations regarding the safe closure and post-closure of hazardous waste facility under RCRA. Because Alternatives 1 and 2 do not comply with the threshold criterion of Compliance with ARARs, they are not eligible for selection as a remedy for the waste pits.

Alternatives 3, 4 and 5 comply with all ARARs.

Long-Term Effectiveness and Permanence

Alternative 1 does not provide long-term effectiveness and permanence since No Action provides no controls to reliably protect human health and the environment over time. Alternative 2 provides minimal long-term effectiveness and permanence. Both alternatives fail to provide long-term effective and permanent protection of groundwater.

To insure long-term effectiveness for Alternative 3, the cap would be carefully maintained, and groundwater would be monitored to insure that the remedy remained protective over time. Deed restrictions would also prohibit future use of the property that could result in damage to the cap such as construction that would require excavation.

To insure long-term effectiveness for Alternative 4, the cap and SVE system would be carefully maintained, and groundwater would be monitored to insure that the remedy remained protective over time. Deed restrictions would also prohibit future use of the property that could result in damage to the cap, SVE wells and on-site vapor treatment system, such as construction that would require excavation.

Alternative 5 provides the highest level of long-term protection and permanence by requiring excavation and treatment of contaminated waste and a small amount of adjacent contaminated soil, as well as SVE of contaminated soil beneath the excavated waste.

Because Alternatives 3,4 and 5 would leave hazardous substances onsite, a review would be conducted at least every 5 years to ensure that the remedy continues to provide adequate protection of human health and the environment in accordance with Section 121(c) of the Superfund law.

Reduction of Toxicity, Mobility, and Volume (TMV) through Treatment

Alternatives 1 and 2 do not meet the statutory preference for treatment by reducing the toxicity, mobility and volume of waste or contaminated soil through treatment.

Under Alternative 3, approximately 15,500 cubic yards of waste and 300,000 cubic yards of contaminated vadose zone soil will remain in place beneath the cap. Alternative 3 does not satisfy the statutory preference for treatment as defined in Section 121(b) of the Superfund law.

The SVE component of Alternative 4 will reduce the toxicity, mobility and volume of contaminated soil through treatment such that groundwater would not be significantly affected in the future. Alternative 4 leaves approximately 15,000 cubic yards of waste in the pits beneath the cap.

Alternative 5 provides the highest level of reduction in toxicity, mobility, and volume (TMV) by excavation and off-site treatment of waste and SVE of contaminated soil beneath the waste. The total excavation volume for Alternative 5 is estimated to be about 42,000 cubic yards. This volume consists of approximately 10,200 cubic yards of surface fill, 15,600 cubic yards of waste material, 5,200 cubic yards of adjacent contaminated soil around the perimeter of the pits, and 11,900 cubic yards of soil below the waste.

Cost

The present worth cost for Alternative 3 is $4,200,000 which includes capital costs, and costs of operation and maintenance over a 30-year period.

The present worth cost for Alternative 4 is $8,9800,000. The present worth cost for Alternative 5 is $97,310,000. The cost of Alternative 5 is significantly more than Alternative 4 which is also protective of human health and the environment.

Short-Term Effectiveness

Short-term effectiveness is measured in terms of the risks posed to the community and workers during construction of the remedy and the time until remedial response objectives are achieved.

Under Alternatives 3 and 4, the potential for short-term exposure to contaminants during implementation would be limited and readily controllable. Alternative 3 would require approximately 6 to 12 months to design and

construct. Alternative 4 will require approximately 8 to 12 months to design and construct.

Because Alternative 5 is expected to be more complex and take a longer time to implement, its ability to demonstrate short-term effectiveness is much more uncertain than other alternatives. Excavation of hazardous waste beneath an enclosure is extremely rare. Full scale excavation of contaminants with characteristics similar to the Del Amo waste (i.e., highly volatile and toxic) has never been done.

Workers would be required to operate in an environment where benzene concentrations could range as high as 69 to 207 ppm. This is many times higher than the Occupational Safety and Health Administration (OSHA) standard of 1 ppm for benzene. Hydrogen sulfide concentrations inside the enclosure could be as high as 50 ppm, five times higher than its OSHA standard of 10 ppm and many times higher than its odor threshold of 6 ppb. These exposures could be mitigated by wearing protective clothing and SCBA tanks. However, this would introduce the additional hazards of heat exhaustion, reduced hearing and visibility, and slip, trip, and fall hazards. These hazards would be significant because of the length of time needed to excavate the pits. Working in this level of protection for prolonged periods of time is not routine.

The ability of Alternative 5 to protect the community relies on the effectiveness of the enclosure and the emissions treatment system. A failure of the enclosure or the emissions capture and treatment system could expose the community to hazardous levels of airborne contaminants.

The total duration of excavation and backfilling beneath an enclosure for all pits would be about 2 years.

Implementability

Alternatives 1, 2, 3 and 4 are technically and administratively feasible. The materials and services needed to implement these alternatives are readily available.

The implementability of Alternative 5 is less certain than Alternatives 3 and 4.

The most significant technical uncertainties associated with excavation would be (1) excavation rates; (2) VOC emission rates from waste and soil; (3) different characteristics of the waste material; and (4) efficiency of the emission control equipment in capturing and destroying VOCs.

Excavation rates would be affected by the constraints of stringent health and safety requirements for workers within the enclosure, the need for high volume air ventilation and treatment to protect the workers, the use of vapor-suppressing foam on the excavation faces and waste-filled roll-off bins, and custom designed waste and soil handling/loading to address sticky waste. Any of these uncertainties could increase the time needed to excavate the pits, thereby prolonging the potential risks to the community and workers and increasing costs.

Future Activities at the Waste Pit Area

After the close of the public comment period, EPA will consider all comments received. EPA will then issue a formal document, called a Record of Decision (ROD), which explains in detail EPA's selected remedy for cleanup of the Waste Pit Area. This document will include EPA's responses to comments received during the public comment period.

After the Record of Decision is issued, EPA expects to initiate negotiations with the parties responsible for contamination at the Waste Pit Area. The objective of these negotiations is to reach an agreement under which the responsible parties commit to finance and conduct the cleanup. If such an agreement cannot be reached, EPA will take appropriate enforcement actions against these parties.

It is expected that design of the selected remedy will be initiated during the negotiation period. Actual construction of the remedy is expected to begin about a year after the date of the Record of Decision.

Opportunities for Community Involvement

EPA invites your participation in selecting a remedy for the Del Amo Waste Pits. There are a number of ways you can become involved. A public meeting will be held on Wednesday, January 29, 1997, to hear your comments on all the alternatives explained in this fact sheet. You may provide your comments in writing or orally.

In addition, EPA welcomes comments submitted directly to our office. Please send those comments to the attention of Dante Rodriguez (SFD-7-1), U.S. Environmental Protection Agency, 75 Hawthorne, San Francisco, CA 94105.

If you would prefer you may tell us your comments by calling Andy Bain, the community involvement coordinator for the Del Amo site, using EPA's toll-free number 800-231-3075.

To learn more about the Del Amo Waste Pits, you may find an extensive amount of information at EPA's information repositories at the Torrance or Carson public libraries. These repositories contain the documents that EPA used to identify its proposed remedy. This information will be used to support any Record of Decision (ROD) on the final cleanup method. The addresses are located at the back of this fact sheet.

To help the community learn more about the site, in particular the technical or scientific aspects of the cleanup, EPA has provided a technical assistance grant to the Del Amo Action Committee (DAAC). DAAC has hired an environmental contractor to review a number of site documents and explain some of the technical details of the proposed cleanup. DAAC can provide fact sheets and other information to help residents understand the site. The number for DAAC is (310) 769-4813.

Although we attempt to weigh all considerations when proposing a preferred remedy, it is not always possible for us to know about all the community's concerns. Thus, we invite your participation by submitting your comments in writing or by attending the upcoming public meeting.

The public comment period for the Waste Pits remedy extends from December 16, 1996, to February 13, 1997.

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Send questions and comments to: r9.info@epa.gov
Region 9 Office: 75 Hawthorne Street, San Francisco, California, 94105

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http://www.epa.gov/region09/waste/sfund/npl/delamo/document/pp.htm